

SECRET

Monthly Report

PAR 233

31 Jan 66

25X1

SUBJECT: Zoom (6X to 60X) Project Lens for Monochromatic Light

TASK/PROBLEM

1. Investigate the possibility of designing a 6X to 60X Zoom Projection Lens for Monochromatic Light.

DISCUSSION

2. Further study of the problems experienced in designing the system has indicated that very "strong", high-aperture elements are needed in the approach described in the 30 Nov 65 Quarterly Report. Two additional arrangements are also being considered. The first of these would provide two zoom systems positioned in sequence through the projection system; otherwise it is similar in concept to the original. The second arrangement uses five discrete assemblies along the axis. The first, third, and fifth assemblies are stationary; the second and fourth are movable to provide magnification change. No intermediate image is formed in this latter arrangement and it appears to require fewer and weaker elements than the others.

3. There is a potential light transmittance problem in the system as designed for 3500A to 4000A radiation. Any of the above systems will require the "light" to pass through six to eight inches of glass and from available transmittance data for the necessary glass types, it appears that the system transmittance will be in the (2% to 10% range). Unless the proposed light-amplification screen can compensate for this loss, the design of the 6X to 60X Zoom Projection Lens for ultraviolet light does not appear feasible.

PLANNED ACTIVITY

4. Geometric lens design effort will be continued and the customer will be consulted concerning the probable effect of the expected low transmittance of the optical system.

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GROUP 1
EXCLUDED FROM AUTOMATIC DOWNGRADING
AND DECLASSIFICATION